DOCUMENT RESUME

ED 347 818 FL 020 328

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TITLE A Comparative Sketch of Pueblo Languages: Phonology.
PUB DATE 87
NOTE 22p.; In: Kansas Working Papers in Linguistics, Volume 12; see FL 020 321.
PUB TYPE Reports - Descriptive (141)

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS *American Indian Languages; *Anthropological Linguistics; *Contrastive Linguistics; Dialects; Language Research; *Linguistic Borrowing; Uncommonly Taught Languages
IDENTIFIERS *Pueblo (People)

ABSTRACT

In an attempt to determine some of the shared phonological traits among Pueblo Indians of the American Southwest, this paper compares the sound systems of Pueblo languages. The languages within the scope of this research are Zuni, Keresan (Acoma and Santa Ana), and Tanoan (Sandia, Taos, Jemez, and Santa Clara). It is noted that Pueblo Indians have lived together for many centuries and are culturally homogeneous, but are known for their linguistic conservativism or what has been called the "compartmentalization" of their languages, which presents alien linguistic traits from penetrating their own linguistic system. After a brief introduction to the classification of the languages, their sound systems are discussed in terms of consonants, vowels, suprasegmentals, and phonotactics. Most of the typological categories are drawn from Sherzer (1976) and Kaufman (1977). Appended are phoneme charts showing some phonemic symbols from Zuni, Acoma, Santa Ana, Sandia, and Jemez. Contains 40 references. (Author/LB)

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A COMPARATIVE SKETCH OF PUEBLO LANGUAGES: Phonology

Yukihiro Yumitani

Abstract: Pueblo Indians of the American Southwest have lived in a contiguous area for many centuries. Close contacts and bi- or multilingualism in different Indian languages may have led to diffusion of linguistic features across the language boundaries. In an attempt to determine some of the shared phonological traits, this paper compares the sound systems of Pueblo languages.

Introduction

Pueblo Indians have lived close together in the American Southwest for many centuries--some groups have been in contact for at least 1500 to 2000 years. They are culturally homogeneous, but noted for their linguistic conservativism or what Sherzer calls the "compartmentalization" of their languages: "When they do learn other languages, they seem consciously to avoid allowing alien linguistic traits to penetrate their own linguistic system" (Sherzer 1976:244). In other words, Pueblo people appear to remain pretty distinct linguistically in spite of many centuries of contact.

Most of the Pueblo Indians presently use English as a means of communication with people from other pueblos who speak unintelligible Indian languages. This implies unlikelihood of mutual linguistic influences today. However, as Miller (1978:612-13) correctly notes, "[s]ince neither Spanish nor English was available in Pre-Columbian times to mediate inter-pueblo contact, it is likely that bilingualism was somewhat greater than today." So past bilingualism or multilingualism in different Indian languages may well have led to diffusion of linguistic traits from one language to another.

The purpose of this study is to ascertain what linguistic traits, if any, are widespread among Pueblo languages. The languages within the scope of this research are as follows:

Kansas Working Papers in Linguistics. Vol. 12, 1987. pp. 119-139

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Zuni

Keresan
  Western: Acoma, Laguna,
  Eastern: Zia, Santa Ana,
  San Felipe, Santo Domingo,
  Cochiti

Tanoan
  Tiwa (Southern): Isleta
  Sandia
  (Northern): Picuris
  Taos
  Towa: Jemez
  Tewa: Tesuque, Nambe, Pojoaque, San Ildefonso, Santa Clara, San Juan

I chose one language or dialect from each group as representative of that group. These are underlined in the above list.[1]

The focus of the present study is comparative phonology. After a brief introduction to the classification of the languages, I will discuss their sound systems in terms of consonants, vowels, suprasegmentals and phonotactics. The phoneme inventory of each language is presented in the appendix. I owe most of the typological categories employed here to Sherzer (1976) and Kaufman (1977).

Language Relationships

Zuni. Zuni is generally considered a language isolate. In 1929, Sapir included Zuni in his Aztec-Tanoan phylum, along with the Uto-Aztecan and Kiowa-Tanoan groupings (Voegelin & Voegelin 1976:487). George Trager supported this relationship, and in 1951 he proposed Zuni and Kiowa-Tanoan as a branch of Aztec-Tanoan (Davis 1979:410).

Another language grouping to which Zuni is sometimes linked is Penutian. In 1964, Stanley Newman presented evidence for a genetic relationship of Zuni to California Penutian languages (Davis 1979:410). Even if Zuni is related to Uto-Aztecan, Kiowa-Tanoan, or Penutian groups, the relationship must be very remote.

Keresan. Keresan is presently spoken in seven New Mexico pueblos. The language is divided into two main

dialects--Western Keresan and Eastern Keresan. The dialectal differences are said to be primarily lexical rather than phonetic or grammatical (Spencer 1946:230).

Keresan is not closely related to any language or language family, and is regarded as a language isolate. Sapir in 1929 included Keresan in his Hokan-Siouan phylum but with no published convincing evidence. In fact, the postulation of Hokan-Siouan phylum itself has gained little, if any, support from other linguists (Davis 1979:411).

Tanoan. The Tanoan language family consists of at least three language groups--Tewa, Tiwa and Towa. (Only these three are represented in the present study.) Tewa is spoken in six Rio Grande Valley pueblos in New Mexico. The differences among the dialects are minor and they are mutually intelligible. Tewa is also spoken by descendants of these Pueblo people living among the Hopi in Arizona (the so-called Hopi-Tewa). There are marked differences between this and the Rio Grande Valley dialects "in areas of vocabulary, phonology, and grammar, although a degree of mutual intelligibility is retained" (Davis 1979:405).

Tiwa is divided into two groups--Northern Tiwa (Taos, Picuris) and Southern Tiwa (Isleta, Sandia). Taos and Picuris are considered by some linguists to be separate languages, while Isleta and Sandia are mutually intelligible dialects of the same language (Davis 1979:404).

Jemez is the only extant member of the Towa branch. The now extinct Pecos could be another Towa dialect, or it may have been a fourth Tanoan language.

The Tanoan languages are related to Kiowa, a Plains language now spoken in Oklahoma. The relationship was first postulated by J. P. Harrington in 1910, and these languages constitute the well-established Kiowa-Tanoan language grouping. Sapir considered Kiowa-Tanoan to be related to Uto-Aztecan and postulated an Aztec-Tanoan phylum. If the two language families are actually related, it is a very remote relationship (Hale & Harris 1979:171).

Consonants

Stops and Affricates. Five Pueblo languages have voiceless and voiced stop series. The languages are: Santa Ana, Sandia, Jemez, Santa Clara, and Taos. All

but Santa Ana are Tanoan languages, and Kiowa, another member of the Kiowa-Tanoan family also has this contrast between stops. It may be that the voicing distinction for stops is a Kiowa-Tanoan family trait, although the distributions of /d/ and /g/ in Sandia, and /b/,/d/ and /g/ in Taos are very limited in native words.[2] Likewise, the voiced stops in Santa Ana only appear in loanwords, e.g., benta:na 'window' (Davis 1964:61).

The aspirated/unaspirated stop series are found in Keresan (Acoma, Santa Ana) and all the Tanoan languages except Santa Clara.[3] (Kiowa has these two series of stops too.) In Keresan, aspiration contrast also occurs with affricates.

The presence of glottalized stops (ejectives) and glottalized affricates seems to be a universal areal trait of the Pueblo area.[4]

Labialized velar stop (/k^w/) is found in all but Keresan languages.[5] The development of this phoneme in the Tanoan languages may be an innovation--possibly due to an influence from Navajo--since it is not present in Kiowa.

Keresan (Acoma, Santa Ana), Jemez, and Santa Clara also have a palatalized stop /t^y/. Its absence in Tiwa (Sandia, Taos) and Kiowa suggests that Jemez and Santa Clara may have developed this phoneme through contact with Keresan groups.

Three languages, i.e., Zuni, Keresan (Acoma, Santa Ana), and Santa Clara Tewa, possess both /c/ and /č/--plain or modified.

Retroflexed affricates are found only in Keresan.

Spirants. The voiced/voiceless opposition in spirants is present only in Jemez (/f/~/v/, /s/~/z/) and Santa Clara (/f/~/v/). Considering the fact that Kiowa has /s/ and /z/, the lack of voiced fricatives in Tiwa (Sandia, Taos) and other Pueblo languages may constitute an areal trait.[6]

Glottalized spirants are found in Keresan (Acoma, Santa Ana). Keresan is also the only language group which possesses retroflexed spirants.

All Tanoan languages have labialized velar or glottal fricatives: Sandia (/h^w/), Jemez (/h^w/), Santa

Clara (/x^w, h^w/), Taos (/x^w/).[7] These sounds may be an innovation of the Tanoan languages since Kiowa does not possess any labialized fricative. One possible source for these fricatives in Tanoan languages is Navajo. (Navajo has both /x^w/ and /h^w/ as well as /k^w/ (Sapir & Hoijer 1967).)

Labial fricatives occur only in Tanoan languages: Sandia (/f/), Jemez (/f, v/), Santa Clara (/f, v/), Taos (/f/). Except for Jemez /v/ and Santa Clara /f, v/, all the labial spirants are found only in Spanish and English loanwords.[8] Incidentally, Kiowa does not have a labial fricative.

The interdental fricative /θ/ is present only in Santa Clara. Santa Clara Tewa is the only Tanoan language without the aspirated stop series, and /θ/ may derive from /t^h/.[9]

As for velar fricatives, Santa Clara and Taos have both /x/ and /x^w/. Neither Kiowa nor any other Tanoan languages have velar spirants.

Four languages, i.e., Zuni and all the Tanoan languages but Santa Clara Tewa, have a lateral fricative. Navajo, which has lateral affricates as well as a lateral sibilant, may have been a factor in the development of a lateral spirant in these Tanoan languages. (Kiowa only has a voiced lateral--not fricative.)

Liquids. It seems that most of the Pueblo languages originally had only one plain liquid (/l/ or /r/), and that the development of a second liquid consonant in languages such as Santa Ana, Sandia, Jemez, and Taos, is a recent innovation, due to bi- or trilingualism in the tribal language and Spanish and/or English. The second liquids in these languages occur only in recent loans: Santa Ana (/l/), le:ba 'coat' (< Sp. leva); Sandia (/l/), làlúna 'levis; blue jeans' (< Sp. pantalones ?); Jemez (/r/), móro 'blackberry' (< Sp. mora); Taos (/r/), rancu'una 'ranch' (< Sp. rancho).

It is to be noted that only the languages which have /l/--native or borrowed--possess lateral fricative /ɬ/, i.e., Zuni, Sandia, Jemez, and Taos.

Nasals. What is common among the Pueblo languages with the exception of Santa Clara is that they have only two nasal consonant phonemes, i.e., /m, n/. Santa Clara has /ñ/ in addition to these.

Also, a glottalized nasal series is present only in Keresan (Acoma, Santa Ana).

Semivowels. Except for Keresan which has plain and glottalized semivowel series, all the Pueblo languages have two semivowels, i.e., /w, y/.

Summary. Some of the findings discussed above are summarized in Table 1 below. In this table, three kinds of markers are used. If a certain trait is unquestionably present in a language, I marked it with an asterisk (*). If the presence of a feature is controversial due to differences in opinion among scholars (e.g., treatment of glottalized stops), it is marked with a question mark (?). If a feature developed rather recently--typically through contact with European languages--I placed "R" in the appropriate column.

Table 1. Consonantal Traits in Pueblo Languages.

	Zuni	Acoma	S.A.	San.	Jemez	S.C.	Taos
vd/vl			R	*	*	*	*
asp/unasp		*	*	?	*		?
glottalized	?	*	*	?	*	*	?
labialized	*			?	*	*	?
palatalized		*	*		*	*	
retroflexed		*	*				
lateral fricative	*			*	*		*
liquids	l	r	r(l)	r l	l(r)	r	l(r)

Note: S.A. = Santa Ana; San. = Sandia; S.C. = Santa Clara.

Glottalization of consonants is the only universal areal trait, found in all the Pueblo languages.

The second most common feature is aspiration contrast with respect to voiceless stops. This feature is only absent in Zuni and Santa Clara.

Labialization of consonants--particularly /k^w/--occurs in all the languages except Keresan.

Palatalized stops are also common, but they do not occur in Zuni, Sandia, and Taos.

As for liquids, all the languages in the Pueblo area originally had only one liquid, but through contact with languages such as Spanish and English, several languages have come to have a second liquid. Its occurrence is limited to loanwords.

A lateral fricative is present in Zuni and most Tanoan languages. It does not occur in Keresan and Santa Clara.

Labial fricatives are found in four languages--all Tanoan. The labial fricative in Sandia and Taos, however, occurs only in loanwords.

Among the less widespread traits is retroflexion. Retroflexed affricates and sibilants occur only in Keresan.

Vowels

Number of Plain Vowels. "Plain vowels" are defined here as short, oral, voiced vowels. All the non-Tanoan languages have five plain vowels. On the other hand, Tanoan languages except Sandia have six.[10] It appears that Sandia lost a vowel, since all the other Kiowa-Tanoan languages have six plain vowels.

Devoicing. Only Santa Ana Keresan has an opposition of voiced/voiceless vowels. As for Acoma, Miller (1965:16) writes:

> A vowel can be devoiced if it is final or followed by a devoiced syllable . . . and comes after the last accented syllable; the devoicing is in part conditioned and in part in free variation.

However, Maring (1967) sets up voiceless vowels as separate phonemes in Acoma.

Nasalization. All the Tanoan languages possess nasalized as well as oral vowels. This is probably a family trait of Kiowa-Tanoan.

Length Distinction. All the Pueblo languages except Sandia and Taos phonemically distinguish vowel length. It may be that the Tiwa languages have lost the length distinction.[11] (Kiowa also has short/long vowels.)

Summary. The most common trait as regards vowels is the length distinction. It occurs in all but Tiwa (Sandia, Taos). Although absent in the language of older Sandia speakers, vowel length is becoming phonemic for younger speakers of this language.

Oral/nasalized vowel distinction is probably a family trait of Kiowa-Tanoan. It is not found in any other Pueblo languages.

Table 2. Vowel Traits in Pueblo Languages.

	Zuni	Acoma	S.A.	San.	Jemez	S.C.	Taos
vd/vl		?	*				
oral/nasal				*	*	*	*
length	*	*	*	R	*	*	

Suprasegmentals

Zuni is the only Pueblo language which does not have any suprasegmental phoneme. It has stresses (strong, weak), but their occurrence is predictable. The strong stress "falls on the first syllable of the word unit" and "[a]ll other syllables have the weak stress" (Newman 1965:14).

All the other languages have phonemic tones or stresses--sometimes both of them. According to Miller (1965:8-9), Acoma has "tonal accents" (high, falling, glottal) which primarily carry a pitch function. Maring (1967:1) argues, however, that the language has

two phonemic stresses (strong, weak) and that pitch differences arise due to different degrees of amplitude in stresses.

On the other hand, Santa Ana reportedly has four kinds of accent (level, falling, breathy, glottal) (Davis 1964:63).

As for Tanoan languages, Sandia has three tones (high, mid, low) and three stresses (primary, medial, weak), while Jemez has two tones (high, low). Santa Clara possesses stress and pitch accents (high, mid, low, falling, weak), and only syllables with a strong stress make pitch distinctions. Finally, Taos has three phonemic tones (high, normal, low).

In summary, although there is yet much to be known about suprasegmentals of these Pueblo languages, it seems that some kind of tones play an important function in the majority of the languages.

Restrictions on the Distribution of Vowels and Consonants

In Zuni, all the syllables must begin with a consonant or a consonant cluster. The only syllable-initial clusters permitted are /k$^{?}$, k$^{w?}$, c$^{?}$, č$^{?}$/.[12] Syllables with these phonemes as initial clusters can only occur word-initially. A vowel, a consonant, or a consonant cluster (two consonants) may end a syllable. Of all the consonant clusters found in Zuni, geminate consonants are most common and noteworthy. Unlike the relatively free distribution of consonants, the only possible vowel clusters are geminate (long) vowels.

Acoma syllables must also start with a consonant or a two-consonant cluster. Only a vowel or a two-vowel cluster may end a syllable. The second member of vowel clusters is always /i/ or /u/. Most consonant clusters consist of /s/ + a stop, and clusters of a nasal + a plain stop can occur in non-initial positions of loanwords or probable loanwords, e.g., sántu 'saint' (Miller 1965:9).

The phonotactics of Santa Ana reported in Davis (1964) is very similar to that of Acoma. One difference found in Santa Ana is that glottal stop /?/ as well as a vowel may terminate a syllable. Syllables ending in a nasal are found in a few loanwords, e.g., nárán 'orange' (< Sp. naranja) (Davis 1964:59). Some loanwords also contain a cluster of a stop + /r/ or

/l/, e.g., plå:sA 'city' (Davis 1964:61). Voiceless vowels do not occur syllable-initially.

In Sandia, only a consonant or a consonant cluster may begin a syllable, while a syllable may terminate in a vowel or a consonant. The only consonants which may end a syllable are /b, d, g, m, n, l, r, y, w/. Word-medial consonant clusters normally consist of two consonants, except in loanwords, e.g., ʔalámbri 'wire' (< Sp. alambre) (Brandt 1970:92). The only vowel clusters found are /ie, ia, ǝa, ue, ua, ịẹ, ạạ/. No geminate vowels occur in Sandia. (See Note 11.)

Unlike other Pueblo languages, Jemez has many syllables beginning with a vowel, although CV syllables are most common (Martin 1964:26). A vowel or a consonant may end a syllable. The permitted syllable-final consonants are /ʔ/ and /š/. All consonant clusters consist of /ʔ/ + /m, n, y, w, l/.[13] Vowel clusters occur only at syllable boundaries.

In Santa Clara, a consonant usually begins a syllable. Vowel-initial syllables occur but are rare (Hoijer & Dozier 1949:139). Syllables may terminate in a vowel or a consonant. The consonants which may occur in this position are /n, h, ʔ/ (Hoijer & Dozier 1949:143). Consonant clusters occur only word-medially. The same thing is true of vowel clusters.

Finally, in Taos only a single consonant may begin a syllable, except for recent loanwords from Spanish and English which have initial consonant clusters such as /pl, pr, tr, kl, kr, fr/ (G. Trager 1946:191). A syllable may end in a vowel, a consonant (sonorant), or a consonant cluster (a sonorant + a voiced stop). The consonant clusters occur only word-finally and are very rare. The permitted vowel clusters are /ie, ia, uo, ǝo, ịẹ/. There are no phonemic long vowels in Taos.

It is noteworthy that recent loans from Spanish and English have caused a change in the phonological structures of many Pueblo languages.

Conclusion

The previous discussion revealed some common linguistic features among the Pueblo languages. In discussing shared phonological traits, I speculated on where the traits might have come from, but sometimes I could not determine the source of diffusion. This is

partly because I did not study all the neighboring languages in the Southwest: I only referred to Kiowa and Navajo. I did not include in the present survey Pueblo languages spoken in Arizona (i.e., Hopi and Hopi-Tewa). But even if I investigated all the Pueblo and neighboring non-Pueblo languages, I would still have to face a serious constraint. Neither Zuni nor Keresan has a closely-related language in any other non-contiguous area. It is difficult to determine whether a certain areal trait present in these languages is original or borrowed. In this sense, Tanoan languages are in a slightly better situation since they have a sister language, Kiowa, in another culture area.

Generally, most of the languages investigated in this study need more and better descriptive work. This is especially true of the fields of syntax and semantics, but even the morphological studies that I have looked at, many of them are sketchy. In addition, dictionaries are essential if we are to do a thorough comparative study of any languages.

Areal linguistic studies can provide an important clue to the history of cultural contact in an area. They may also contribute to the understanding of languages in general--for instance, they may help us obtain further insight into what linguistic features are more likely to be diffused than others.

The study of Pueblo languages in particular has yet another sort of significance. Many of these Indian languages are still viable, and this makes it possible to study on-going changes--not only microlinguistic but also sociolinguistic processes--occurring in languages in a contact situation. In my opinion, the Pueblo area is one of the best places for studying linguistic acculturation. The present survey is just a small step in that direction.

NOTES

1. The primary sources of the data used in this study are as follows:

Zuni--Newman (1965).
Acoma (W. Keresan)--Miller (1965), Maring (1967).
Santa Ana (E. Keresan)--Davis (1964).
Sandia (S. Tiwa)--Brandt (1970).
Taos (N. Tiwa)--G. Trager (1944, 1946, 1948).
Jemez (Towa)--Martin (1964).
Santa Clara (Tewa)--Hoijer & Dozier (1949), Speirs (1966).

The data on Kiowa and Navajo were obtained from Watkins (1984) and Sapir & Hoijer (1967), respectively.

2. These phonemes normally occur word-initially in Spanish loanwords (see Brandt (1970:82) and G. Trager (1946:196-97)).

3. Brandt (1970) on Sandia and G. Trager (1948) on Taos treat the aspirated stops as clusters of a voiceless unaspirated stop plus /h/. They apply the same principle to the treatment of glottalized stops as well (i.e. a plain stop plus /ʔ/).

4. Newman considers /$k^{ʔ}$, $k^{wʔ}$, $c^{ʔ}$, $č^{ʔ}$/ to be consonant clusters with the glottal stop as the second (or last) member (Newman 1965).

5. Again Brandt (1970) and G. Trager (1948) treat this phoneme as a cluster of /k/ and /w/.

6. Hale, however, reconstructed only the voiceless fricative /*s/--other than /*h/--for proto-Kiowa-Tanoan (Hale 1967:115).

7. Brandt (1970) and G. Trager (1948) take Sandia /h^{w}/ and Taos /x^{w}/, respectively, to be cluster phonemes. Martin claims that Jemez /h^{w}/ is a labialized glottal fricative, but also states that [h^{w}], an allophone of the phoneme, "often fluctuates freely with an allophone [f^{w}]" (Martin 1964:18). "/h^{w}/" may actually be the voiceless bilabial fricative /ɸ/.

8. /f/ and /v/ in Santa Clara "vary from the bilabial to the dento-labial position of articulation; the latter probably more frequent among the younger Tewa speakers" (Hoijer & Dozier 1949:141). These phonemes occur in native words, but their actual pronunciation among younger people is apparently influenced by English pronunciation.

9. /θ/ varies "from heavily aspirated apico-dental stop [t̪ʰ] to apico-interdental fricative [θ]" (Speirs 1966:47).

10. Isleta, the other dialect of Southern Tiwa, also has five plain vowels (Leap 1970).

11. Among younger speakers of Sandia, there is a tendency to substitute a long vowel for low tone; thus vowel length has become phonemic for them (Brandt 1970:89-90).

12. Newman (1965), as was mentioned earlier, treats the phonemes as consonant clusters. If they are treated as unit phonemes instead, all the syllables in Zuni must begin with a single consonant.

13. This could be an influence from its neighbor language, Keresan, which has glottalized sonorants.

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APPENDIX: PHONEME CHARTS

In the following charts, some phonemic symbols are enclosed within braces {}, while others are placed in parentheses (). The symbols enclosed in braces represent phonemes whose status is uncertain--whether they are unit phonemes or cluster phonemes. The phonemes within parentheses are recently-borrowed phonemes: they occur in loanwords from Spanish and English.

Zuni

p	t		k	k^w	ʔ	i	o
						e	u
			{$k^ʔ$	$k^wʔ$}		a	
		c	č				
		{$c^ʔ$	$č^ʔ$}			i:	o:
						e:	u:
	s		š		h	a:	
	ɬ						
	l						
m	n						
w			y				

Acoma (Western Keresan)

p	t	t^y	k	ʔ	i	ə	u
					e		
p^h	t^h	t^{yh}	k^h		a		
$p^ʔ$	$t^ʔ$	$t^{ʔy}$	$k^ʔ$				
					i:	ə:	u:
	c	(č)	ç		e:		
	c^h	$č^h$	$ç^h$		a:		
	$c^ʔ$	$č^ʔ$	$ç^ʔ$				
	s	š	ş	h			
	$s^ʔ$	$š^ʔ$	$ş^ʔ$				
	r						
	$ʔ_r$						
m	n						
$ʔ_m$	$ʔ_n$						
w		y					
$ʔ_w$		$ʔ_y$					

Santa Ana (Eastern Keresan)

p	t	t^y	k	ʔ	i e	ɘ	u
p^h	t^h	$č^h$	k^h			a	
$p^ʔ$	$t^ʔ$	$č^ʔ$	$k^ʔ$				
					i:	ɘ:	u:
(b)	(d)		(g)		e:		
						a:	
	c	ç	(č)				
	c^h	$ç^h$			I E	Ɜ	U
	$c^ʔ$	$ç^ʔ$				A	
	s	ṣ	ś	h			
	$s^ʔ$	$ṣ^ʔ$	$š^ʔ$				
	(l)						
	r						
	$ʔ_r$						
m	n						
$ʔ_m$	$ʔ_n$						
w		y					
$ʔ_w$		$ʔ_y$					

Sandia (Southern Tiwa)

p	t		k {k^w}	ʔ	i e	ə	u
{p^h	t^h		k^h}			a	
{$p^ʔ$	$t^ʔ$		$k^ʔ$ $k^{ʔw}$}				
b	d		g		į ę	ə̣	ų
		č				ą	
		{$č^ʔ$}					
(f)	s	š		h {h^w}			
	ł						
	l						
	r						
m	n						
w		y					

Jemez (Towa)

p	t		t^y	k^w	ʔ	i	i:	ɨ	ɨ:
						e	e:	o	o:
$p^ʔ$	$t^ʔ$					ɛ	ɛ:	ɔ	ɔ:
	t^h			k^h	k^yh				
				$k^ʔ$	$k^ʔy$	į	į:	ɨ̨	ɨ̨:
								ǫ	ǫ:
						ɛ̨	ɛ̨:	ɔ̨	ɔ̨:
b	d			g	g^y				
		č							
		$č^ʔ$							
		j							
h^w(f)	s	š			h				
v	z								
	ł								
	l								
	(r)								
m	n								
w			y						

Santa Clara (Tewa)

p		t	t^y		k	k^w	ʔ		i	i:		u	u:
									e	e:		o	o:
$p^ʔ$		$t^ʔ$			$k^ʔ$	$k^ʔw$			ɨ	ɨ:			
									a	a:			
b		d			g								
			č						į			ų	ų:
		c							ɨ̨	ɨ̨:			
									ą	ą:			
		$c^ʔ$	$č^ʔ$										
			ǯ										
f	θ	s	š		x	x^w	h	h^w					
v													
		r											
m		n	ñ										
w			y										

Taos(Northern Tiwa)

p		t		c	k	{k^w}	ʔ		i			u			
									e			ə			
{p^h		t^h}							a			o			
{$p^ʔ$		$t^ʔ$		$c^ʔ$	$k^ʔ$	$k^ʔw$}									
b		d			g				į			ų			
									ę			ǫ			
(f)		ɬ		s	x	{x^w}	h			ą					
		l													
				r											
m		n													
w					y										